

CLAIMS

1. A method for purification of a vinyl polymer obtainable by the atom transfer radical polymerization of a vinyl monomer using a transition metal complex as a polymerization catalyst,

which comprises bringing said vinyl polymer into contact with an oxidizing agent or a reducing agent.

2. A method for purification of a vinyl polymer having at least one alkenyl group per molecule or an intermediate obtainable in the course of production of said vinyl polymer, which comprises bringing said vinyl polymer or intermediate into contact with an oxidizing agent or a reducing agent.

3. The method for purification according to Claim 1 or wherein the oxidizing agent is oxygen or ozone.

4. The method for purification according to Claim 1 or wherein the oxidizing agent is a peroxide.

5. The method for purification according to Claim 4 wherein the peroxide is hydrogen peroxide or a hydrogen peroxide derivative.

6. The method for purification according to Claim 5 wherein the peroxide is an aqueous solution of hydrogen peroxide, a percarbonate, a perborate or urea peroxide.

7. The method for purification according to Claim 1 or wherein the reducing agent is a metal.

8. The method for purification according to Claim 7 wherein the metal is an alkali metal or an alkaline earth metal.

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9. The method for purification according to Claim 7 wherein the metal is aluminum or zinc.

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10. The method for purification according to Claim 1 or wherein the reducing agent is a metal hydride.

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11. The method for purification according to Claim 10 wherein the metal hydride is any one of aluminum hydride, an organotin hydride and silicon hydride.

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12. The method for purification according to Claim 1 or wherein the reducing agent is any one of boron hydride, hydrazine, diimide, phosphorus, a phosphorus compound, hydrogen and an aldehyde.

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13. The method for purification according to Claim 1 or wherein the reducing agent is sulfur or a sulfur compound.

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14. The method for purification according to Claim 13 wherein the sulfur compound is any one of rongalit, a hydrosulfite and thiourea dioxide.

15. The method for purification according to any of Claims 2 to 14

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wherein the vinyl polymer having at least one alkenyl group per molecule is obtainable by the atom transfer radical polymerization of a vinyl monomer using a transition metal

complex as a polymerization catalyst.

16. The method for purification according to any of Claims 2 to 15

5 wherein the alkenyl group is located at the molecular chain terminus of the vinyl polymer.

17. The method for purification according to Claim 16
10 wherein the vinyl polymer having an alkenyl group at the molecular chain terminus is obtainable by adding a compound having two or more sparingly polymerizable carbon-carbon double bonds during polymerization or after completion of polymerization in an atom transfer radical polymerization system.

15 18. A method for purification of a vinyl polymer for use as a component for a hydrosilylatable composition which comprises bringing the vinyl polymer into contact with an oxidizing agent or a reducing agent.

20 19. The method for purification according to any of Claims 1 to 18 wherein the vinyl polymer is a (meth)acrylic polymer.

25 20. The method for purification according to any of Claims 1 to 19 wherein the vinyl polymer has a number average molecular weight of 500 to 100000.

30 21. The method for purification according to any of Claims 1 to 20 wherein the vinyl polymer has a molecular weight distribution value of less than 1.8.

35 22. The method for purification according to any of

Claims 1 to 21

wherein a center metal of the transition metal catalyst belongs to group 8, group 9, group 10 or group 11 of the periodic table of the elements.

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23. The method for purification according to Claim 22 wherein the center metal of the transition metal catalyst is iron, nickel, ruthenium or copper.

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24. The method for purification according to any of Claims 1 to 23

wherein a polyamine compound is used as a catalyst ligand for atom transfer radical polymerization.

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25. A vinyl polymer as obtainable by the method for purification according to any of Claims 1 to 24.

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26. A hydrosilylatable composition comprising the vinyl polymer obtainable by the method for purification according to any of Claims 1 to 25.

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27. A hydrosilylatable composition comprising
(A) an alkenyl group-containing vinyl polymer obtainable by the method for purification according to any of Claims 1 to 25 and

(B) a hydrosilyl group-containing compound.

28. The hydrosilylatable composition according to Claim 27

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wherein the (B) component has at least 1.1 hydrosilyl groups per molecule.

29. The hydrosilylatable composition according to Claim 27

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wherein the (B) component is a hydrosilane compound

having a crosslinkable silyl group.

30. The hydrosilylatable composition according to any of Claims 26 to 29

5 comprising a platinum catalyst.

31. A crosslinkable silyl group-containing vinyl polymer obtainable by hydrosilylation of the hydrosilylatable composition according to any of Claims 26 to 30.

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32. The vinyl polymer according to Claim 31 wherein the crosslinkable silyl group is a hydrolyzable silyl group.

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33. The vinyl polymer according to Claim 32 wherein the hydrolyzable silyl group is a hydrosilyl group or an alkoxysilyl group.

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34. A curable composition comprising the vinyl polymer according to any of Claims 31 to 33.

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